

Downtime

by Chad

Soft verse—and worse

LET'S face it, much of the stuff we have to read in this business is pretty turgid. So you can imagine my head spinning as, while ploughing through an announcement from a software house, I came across this

Structural analyses

Static and
Dynamic;
Elastic

plastic
Creep and swelling; small
and large deflections.

Hcat

transfer analysis

Steady

State and transient; con-
duction, em-
ission and
Radiation

SIA's Female finite
element modelling.
Eigenvalue
buckling analysis
has been added ...

Leaves left
Only live
Leaves left
Only five

Philistines might say that the paper trimmer was simply left out of alignment, but I like to think that somebody had suddenly 'felt inspired' to elegise about autumn.

First, public courses. I'm in the business, and I'm not happy with the cost effectiveness of the course I give. If a client bothers to ask me about what I think would be most effective, then I would answer that for what it costs to send two to five participants on a public course (with maybe 10 to 40 others in the same class from other firms) they could spend the same time in a practical tutoring mode online.

The trouble is that too few ask that question. They seem to assume that if I give a public course, then I believe in that method. I would personally prefer to deliver training in the context of a small group of people, solving their current problem.

Most of the principles can be taught during such an exercise. But the benefit, as one person who had been exposed to both modes of my teaching said, is "10 times more effective".

Of course it is: it is directly related to your current work problems. Not everyone is equally adept at transferring examples and principles from other contexts, as often taught on public courses, to their own work area.

Public courses have their limitation. You can get an overview of a subject area, you can sample a teacher, and you can meet others from outside your ivory tower. Sometimes you can even get an interesting trip.

But in-house project-oriented tutoring should be more actively considered as a teaching mode.

Groan!

A READER, B. J. Curtis, of Eastleigh, has written in me about our "1984" piece the other week on a computerised food warehouse with a capacity of 64,000 kilograms. He points that this surely should have read 64,000 kilobites.

And could it convert prose into poetry? No, that takes genius.

Still, it's nice to come across art when one isn't looking for it. My former colleague Stephen Bell, who edited Software File, once found a note in a packet of cigarette papers that read

How delightful to know there is a secret poet in SIA's marketing office! Of course, it wasn't written out like that.

Maybe they have a word processor like the one I used to try to write poems on. Every time I made a correction it would remove all the carriage returns and crum the lines together into a solid paragraph. An automatic poetry-to-prose converter.

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Howls of protest?

AN advert from a personal computer company "MAKE YOUR PET SING with our custom-designed music synthesiser system."

My reader Claire Gooding saw this and remarked "A friend of mine used to do that by stepping on her dog's tail."

No complaints from animal lovers, please.

COLOUR BLIND?

Get Better better colour displays which are easy to set and use
Get Better resolution with deeper, richer colours
Get Better availability through the use of colour
Get Better colour continues to grow
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tds

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Name _____ Address _____
Opt 250
1770

GILB'S MYTHODOLOGY

Professional development of computer people

I THINK most of us are well aware that professional development of computer people is not what we would want it to be.

This applies whether we are the professional in question or whether we have a responsibility for such training. I'd like to explore some thoughts with the reader.

First, public courses. I'm in the business, and I'm not happy with the cost effectiveness of the course I give. If a client bothers to ask me about what I think would be most effective, then I would answer that for what it costs to send two to five participants on a public course (with maybe 10 to 40 others in the same class from other firms) they could spend the same time in a practical tutoring mode online.

It was allegedly Cardinall Newman who sent this classified advertisement in to The Times and got it accepted. AN ANGLICAN curate in search of a second-hand portable font will exchange for the same a portrait (in frame) of the Bishop-elect of Verulam.

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FOCUS

Buying your kit off the shelf

CHOOSING AND SELECTING computing systems has never been easy. The equipment market place is a veritable minefield, one where one false step could inflict serious damage not only on your health, but on the installation.

Increasingly suppliers are advertising their products as being in the instant access mode, with "off-the-shelf" and "ready-for-use" being typical sales slogans.

For the unsuspecting purchaser, it is quickly discovered that accommodating the new system on a convenient shelf and switching on is far from the end of the exercise.

For a start, shelves are not recommended locations, while "ready-for-use" in computing terms has different connotations than when purchasing a car or

computers, particularly those which incorporate office interface routines such as word processing or viewdata capability, will increase at a healthy rate.

Time and industry statistics will no doubt tell, but in the meantime the industry is facing a new development. Having been busy concentrating on producing machines for oil purposes, one manufacturer has now announced a system from all machines. Magnaon is marketing what it calls the total OEM concept.

The first UK customer for Magnaon, CAP-CPP (CW, March 13), has acquired an IBM-compatible configuration.

Likewise, no single machine can offer a complete computing facility. This view was emphasised by Colin Smith, secretary of the Central London IDPM.

Talking at a branch meeting, he asserted that there was no such animal as a general purpose computer.

Like the best hi-fi, a computer system is made up of a series of boxes: the processor, backing stores and peripherals. In future installations will consist of a series of boxes linked to a central facility.

Smith dismissed fears that large-scale computers are threatened with an early demise. With the cost of technology coming down and workloads increasing, the cost savings available to large machine users are considerable.

Naturally not all agree that big is best. Consultant David Scott, speaking at the same meeting, suggested that with over 40,000 potential business users in the UK alone, the demand for basic, all-purpose

which includes a Magna processor, Storage Tech and CDC storage peripherals, BASF disc packs, Racal cassettes and Raytheon VDTs to be completely left out, leaving the card readers.

This universal computer approach is fine for those who like to have the best that the world can provide. They also, us, a fringe benefit, much of the real world.

User groups are not holding their annual fests in detectable parts of the real world. A Magnaon customer qualify for automatic membership of at least half a dozen user groups.

Miracle cures in computing are notably thin on the ground, or shelf. Dr Hook and his medicine show may well have been able to peddle cure-all pills back in California, but his present-day counterparts in Silicon Valley are unlikely to meet such universal acclaim.

The all-purpose machine, like the car, has yet to be designed.

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Tom Gilb is an independent consultant, lecturer and author on computer topics.

'Develop office systems plans now or you'll be out of date'

BUSINESS firms need to develop strategies right away for future use of office systems, so as not to find themselves in two years with a large assortment of equipment that cannot be integrated. That is the main warning to come out of the text processing study carried out by CSA firms for the Department of Industry, the report on which is to be published shortly (CW, January 3, 1980, and March 1, 1979).

In their close look at the information handling practices of 10 organisations in the public and private sectors, the researchers found that word processing equipment was being brought in piecemeal in many different parts of organisations, and the capital tied up in this within two years could be sizeable.

All this could be lost when the time comes to introduce an integrated system with electronic mail and, that more mail was copied than thrown away.

These findings have important implications for filing systems, copying and dictation, and show that workstations for use by professional staff will be very important.

The organisations that had already done most in text processing were in the best position to do more, said Diana Duggan of Logica, technical leader of the project. This meant that not all the obvious cost-justifiable applications for word processing had already been taken up, she said, and that the gaining of experience by staff was of great significance.

There were few findings on the specific choice of equipment — which machine is best — and the group made no attempt to recommend on standards. Standards would have to wait for another project.

The consortium of CSA companies is planning to continue working together on further projects, and is negotiating for a major contract with the EEC.

Olivetti has introduced a screen word processor to add to its range of hard-copy and single-line display machines. The Model 621 has a white-on-black screen and is a stand-alone unit to which communications facilities will be added in about four months.

Included in the price of £8,950 is an Olivetti-made daisy wheel printer and twin double density floppy disc drives. The communications link will allow connection to a 10-megabyte hard disc which is capable of serving up to eight 621s.

An IBM 3270 protocol will be part of the communications facility, allowing links to mainframes.

use us before you install to:

- evaluate performance - assess

suitability - confirm benefits - determine

hardware/software options

use us instead of installing to:

- improve cost effectiveness - obtain

system flexibility - overcome existing

problems - have access to a wide range

of skills and resources - avoid hardware

up grade or replacement

use us to provide system support

to ensure success

DRG adds two matrix printers

TWO matrix printers from the Japanese Citizen company have been added to the product portfolio of the OEM division of DRG Business Machines.

Both printers feature a full 96-character set, 256-character buffer, bidirectional, and feature Centronics-compatible interface with optional RS 232 alternative. The 5700 runs at 120 cps and costs £1,295. The 5800 runs at 180 cps and costs £1,475. Quantity discounts are offered.

The OEM division of DRG also sells Beehive terminals and YE-Data floppy disc drives.

Formed last summer as part of the Dickenson-Robinson Group, DRG Business Machines also sells the Cadsoftsystems business computer (CW, June 23, 1979). Both the computer and the OEM products are going round the UK with Computermarket.

Philips joins 'office of the future' race

PHILIPS' entry into the race to develop the integrated electronic "office of the future" has now been officially launched, with the unveiling of the new unified organisation, Philips Business Systems. This is an amalgamation of the four Philips UK firms in finance, manufacturing, communications, small computers and office equipment.

"Ultimate aim is one-stop shopping," CW, January 24.

The first product to be launched under the new banner at Commex 80 on April 15, will be the DSX-40 data message switch. This is based on up to five Zilog Z80 microprocessors (CW, July 12, 1979).

The UK is the first country in which Philips has set up an integrated office systems organisation, partly because the company's market here is one of its biggest worldwide. Managing director of Philips Business Systems is Brian Manley, who sees the ultimate aim of his firm as "one-stop shopping" for the business customer, but the reorganisation will also be gradual.

Headquarters of the new firm will be in Maidenhead, with all R&D centralised at Malmesbury, Wiltshire.

Private viewdata push by GEC

GEC Viewdata Systems is beginning a strong push of its private viewdata systems for in-house use this week at Viewdata 80 at Wembley. Development is expected to be complete in the next three or four months and first deliveries are planned for September.

PAGE SIX for programmers and analysts

Some satisfaction for graduates in DP

FOLLOWING our request of February 14 for letters from graduates telling of their experience of and reaction to the computer industry, we have had considerable correspondence from graduates who have found some degree of success in the business and, not surprisingly, none at all from those who have experienced any disillusionment.

This is not to suggest that the latter group do not exist but rather that they have not responded to our request.

On the bright side, most graduates speaking after two or three years' experience with a mixture of institutions, admitted to enjoying themselves — particularly the responsibility and variety.

Robert Baldock has been working for the past three years with the management consult-

ancy division of Arthur Andersen. A computer science graduate from Imperial College, London, he found little appeal in becoming a full-time programmer so avoided the software houses and end-users.

After an initial training period of four weeks which covered accounting and business fundamentals, he was sent to a worldwide training school to undergo a three-week intensive programming course, which was followed by a further course in the US on Cobol. Having completed 14 weeks' training, he was ready to start work.

"I personally derive great satisfaction from seeing a computer system develop from the early discussions with the user through to detailed design and finally, live operation.

"I would hope that our profession appeals not only to those who are unable to find employment in the field of their choice but in time to become an automatic career choice for those bright and aspiring undergraduates in their final year of college," he added.

The projects Baldock covered have given him experience of programming, systems testing, systems analysis, design of pro-

'Any degree is suitable for computing career'

JOHN COMPTON of St Albans tells quite a different story from Robert Baldock although his conclusions are not altogether dissimilar. He graduated in mathematics in 1968 and then spent 20 years as a missionary in Uganda and the Sudan.

It was not until his final year in the Sudan that he became interested in programming and attended a series of evening lectures at Khartoum University. On his return to the UK he decided to look for a programming job.

"These steps are obviously also those of analyse and programming," he continues, "though the programmer has to convert the final step into machine readable language rather than an examiner readable language."

Compton agrees that degrees,

Blank reply

THE difficulties of signifying that a page has been left on purpose have caused problems for CW readers since Sheldrick first introduced the situation (Page Six, 12).

It was not until his final year in the Sudan that he became interested in programming and attended a series of evening lectures at Khartoum University. On his return to the UK he decided to look for a programming job.

For the best solution have received came from a year-old Jonathan Clark, Culzean in Scotland. He says: "You should write THE NEXT PAGE IS LEFT BLANK ON PURPOSE" on the page before."

Can anyone better that?

Are company perks now getting out of control?

IN recent years it has become quite acceptable in most professions for employees to enjoy only competitive salaries but also additional perks such as expenses, shopping concessions and even holidays. But, to most people, the ultimate perk which many people working in the computer industry do not enjoy is the company car.

Those working as programmers and DP managers have little cause to stir from the security of their own desk, so it is nonsensical that they should be provided with a car to travel to and from work.

The case for cars, however, goes much deeper and is often an incentive to attract highly qualified staff to a position which may not otherwise be able to keep them in the style in which they have become accustomed.

The provision of a company car is no longer a matter of necessity; for salesmen or reps it is a matter of convention if a company is to be an attractive employer.

Last year, the Computer Users Year Book revealed that 27.9% of chief systems analysts, 17.9% of chief analysts/programmers, and 12.5% of all chief programmers have company cars.

The trouble is that the business of perks being offered as a supplement to salary has become completely out of control and many people regard them as normal working conditions rather than extra gifts.

We would be interested to hear from programmers and analysts who feel either that they are more than adequately treated with perks and benefits or who feel that the perks are far too low down the scale compared with some of their peers in the industry.

However, the British Institute of Management last year conducted a survey which concluded that larger companies in the UK are providing a wider range of benefits, including food, drink, tobacco, publishing, medical care, horse racing, use of company yachts, club and hotel discounts.

To the average programmer/analyst, this does not mean much. ICL union representatives of ASTMS have recently been intensifying their argument for company cars, an issue which has been debated over the past four or five years.

As things stand at the moment,

in any discipline, is a suitable qualification for a career in computing as a good degree course should teach students how to find information; how to select what is relevant; how to think logically about that information and how to express clearly the results of that thinking.

"These steps are obviously also those of analyse and programming," he continues, "though the programmer has to convert the final step into machine readable language rather than an examiner readable language."

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Can anyone better that?

SOFTWARE FILE

Level 6 picked for high level executive

A HIGH level operating system developed by Richard Pick in the US is to spearhead a new system called Ultimite, soon to be launched in the UK by Universal Computers and backed by Honeywell.

The operating system is the culmination of 14 years' work and has won itself a high reputation in the minicomputer field.

Its reliability and adaptability have led to its being adopted by several firms, including Microdata, for the Reality series, and Automatic Data Processing for the Hewlett-Packard 3000.

The Ultimite system is composed of Honeywell hardware, using the Level 6/43 and 6/53 and all its associated peripherals and support systems.

The Level 6 hardware was chosen from among several vehicles for the operating system, after Ultimite Corp fell out with Microdata in the US.

Pick's system makes Ultimite a competitive runner in a field not covered by Honeywell's own range. The relationship started in the US, where Ultimite has already taken off with success, and is indicative of an increasing trend to sell machines on the strength of software reliability.

The system has a high reputation for its speed and file-handling capabilities, and the use it makes of firmware techniques to maximise the core storage available to users.

It also provides a data retrieval facility which allows fairly sophisticated use of English-like phrases to query files, comparable to the mainframe facility provided by Cullmann's Online English, and is generally "user friendly".

Reports can be generated and adapted without damaging fast response and running times, due to the system's file and data handling techniques.

In the UK, Universal Computers plans to build up a library of software applications for the system so that, acting as a clearing house for customers, the needs of particular sectors can be catered for by specialised software houses.

The software-oriented approach has already paid off and Ultimite has won two City users through Consultants (Computer and Financial), Eggar Forester the shipbrokers (Software File, March 8) and Sellmann Rayner and Co, stockbrokers and option-dealers, which has just bought the system for £14,000 to run the consultancy's Fiscal stockbroking and accounting facility.

The firm claims that the management package DMARS, originally developed by Turner and Newell as an alternative to IBM's ADRS, can cut CPU usage by a factor of 20%.

The production system Adopto aims to solve the problem of meeting delivery schedules at optimum cost and helps plan efficient use of resources.

APL user group plans register of consultants

THE APL user group plans to form a register of consultants who can offer advice to prospective users in the rapidly expanding APL marketplace.

"Our main purpose is to swap information on APL and market prospects. We are worried about contracts going to 'cowboys' whose inexpert work will give APL a bad name," explained Valarie Luoma, editor of the user group's newsletter.

She can be contacted on Arington 022 020 530.

• The APL specialist consultancy Cocking and Orury has launched a data management package for IBM users and a production and purchasing planning system, Adapto OLS.

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BCPL business system is on way

A COMPREHENSIVE business system written in BCPL is under development at the Cambridge systems house Toltec Data to be sold alongside the DataRing communications system and the portable operating system Trout.

Trot and the high speed DataRing were both developed by Toltec out of the products of Cambridge University research projects: Tripos, a portable minicomputer operating system, and the "data ring" of communications stations that could connect different processors together, haled at the time as a significant step towards machine independent distributed processing (CW, March 15, 1979).

Having put DataRing into printed circuit form and developed Tripos into a commercially supported operating system sold under the name Trout, Toltec has turned its attention away from purely industrial and scientific computing and is seeking to exploit the commercial possibilities of its products.

Backed by a large car dealer with European manufacturing connections, the company is developing the Goose business system. The BCPL language provides portability, an important selling point for the system, which can be built up module by module, according to the user's individual needs.

Trot already runs on Computer Automation, Digital Equipment and Data General minis, and Toltec claims the

implementation on any machine can take less than three months.

Goose runs on hardware in the 80-megabyte size range, perhaps costing less than £20,000. The software costs depend on the user's requirements since the system is designed to be tailored and extended according to needs, but basic modules are available at a "build-on" price of about £2,000.

Talk on copyright

THE law specialist group of the British Computer Society is to be addressed by computer law specialist Alastair Kelman on "Copyright and computer programs: a new approach" at its next meeting on April 18 at 8 pm at the Olivetti Room, BCB, 13 Mandeville Street, London, W1.

Boost for users of Pascal

A COMPANY committed to bringing the advantages of Pascal programming language to the small to medium-sized customer has been formed at Twickenham, Middlesex, 21st Computer Systems is awaiting Version 2 of the Australian Atomic Energy Commission Compiler, Pascal 8000, in order to introduce an IBM Pascal service, and is meanwhile concentrating on education in telecommunications and the use of Pascal.

Cut-price offers from Data General for CS users

COINCIDING with the recent addition of the CS/50 to its Commercial System family (CW, February 14), Data General is offering two of its new software packages for the small business user at two-thirds of the normal price.

The Cobol generator for developing application programs, First, is on offer at £2,608, and the menu system Master is to cost £978 during the introductory period.

Data General claims that the products can achieve a considerable reduction in programmer time.

Also available is Jobs, a job-stream control which can process a batch queue unattended outside working hours.

Multi-terminal support

A VERSION of Perkin-Elmer's OS/32 and multi-terminal software to support the 7/32, 8/32, 32/20 and Model 3240 is available. The OS now supports up to 16 megabytes of memory, and OS/32 includes the basic telecommunication support previously provided by the terminal manager in ITAM/32. ITAM/32 has been unbundled as two separate products, an RJE emulator and a channel terminal manager.

Also provided for users of the multi-terminal monitor system is a job accounting facility in Fortran VII.

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tel: 01 452 840

PEOPLE and EVENTS



Telecom director for CAP Sogeti software

ONE of the two main French operating companies of the CAP Gemini/Sogeti group, CAP Sogeti Logiciel, has recruited a senior director to lead its telecommunications division. Remy Déprés has played a leading role in the International Standards Organisation. After undertaking research into

George Wall has become CMC's branch support manager for the North West Home Counties. He was previously a technical consultant with Computer Automation.

Sean Bedford, former Collector General of Taxes, has joined Insight Management and Personnel Consultants as a senior consultant for special projects. IMPC was formed by ex-Honeywell chief executive Pat Rafter in 1977.

Dwight Olson has joined Megatek as product manager. He was previously with MAR where he was part-owner and director of the company.

Mike Pollitt has been appointed sales director of Ventur Computers after 20 years with ICL. He was until recently sector accounts director with ICL's national accounts sector.

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AUSTRALIA DB/DC Support Staff up to DLRSA 23,000 P.A. plus benefits.

The Bank of New South Wales, Australia's largest commercial bank and one of the largest IBM users in Australia, is seeking experienced DB/DC support staff for its technical support group located in Sydney. The bank is currently committed to IMS based data base and data communications development on a large scale.

Duties

Participate as a member of the DB/DC group in supporting the development, maintenance and operation of new and existing systems using IMS/VIS data base and data communications, and the Lexicon Data Dictionary. Responsibilities include data base design, IMS/DC tuning and performance, data base recovery design and general problem solving.

Experience

1-2 years experience in IMS/VIS DB or DC and experience with any of the following will be considered favourably:

- IBM equipment with OS/VIS • IBM 3600
- Olivetti TCB80 • Application Development Technical Control
- Systems programming.

Hardware

One 14MB IBM 3033MP plus 4MB 370/15B situated in Sydney. Two 3MB IBM 370/15B and five 370/145 situated in other states using 3705 communication controllers and other peripheral equipment supporting a network of 3600 finance terminals in its first stage of implementation, as well as an extensive range of batch and on-line systems.

Software

The bank has installed MVS, VS1, TSO, VTAM/NCP, IMS/DB/DC and expects to remain in the forefront of SNA Development in Australia.

Conditions

Air fare and relocation expenses for your family will be met by the bank and up to three months' subsidised transit housing can be available. These are long term career positions.

The Jobs

A range of positions is available requiring different levels and types of expertise, while extensive training opportunities are available, some degree of expertise in any of the above software fields is essential.

Benefits

Four weeks annual leave with pay loading. Superannuation. Housing finance available in line with bank's current lending policy applying to specialist staff.

Applications

Please apply in writing to Brian Bussell, Care of Business Development Officer, Bank of New South Wales, 29 Threadneedle Street, London EC2R BBBA.

Arrangements will be made to interview selected applicants in late April.

Bank of New South Wales
(incorporated in Australia with limited liability)



Chess protégé Nigel Short, who recently qualified as an international master during the ICE Hastings International Chess Congress, is introduced to ICL computers by one of the company's marketing managers David Nicholson.

Patrick Gouldney has been appointed director of client services with UCC. He was formerly director of UCC Nederland NV in The Hague. Last year he returned to England and has been restructuring the Norbury centre.

Paul Robertson has been appointed to the new position of marketing executive with Wilcox Computers. He was previously with the Sankey group of companies in sales promotion and advertising.

Ed Skluk has become a senior sales engineer with National Semiconductor, based at the company's UK sales office in Bedford. He was formerly with Texas Instruments.

Elli Bayrd has become international support supervisor for the computer products division of Nashua Corp. She was previously international administration manager for the company.

John Cooper has become director of marketing with NEC Information Systems. He was previously director of product marketing at Nixdorf.

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TIM PALMER LOOKS AT ICL's REPLACEMENT FOR THE 2903

KEEPING pace with the march of technology, ICL's new ME29 series offers hardware which can be installed in an office environment, software which offers extended networking facilities, a choice of hierarchical or simple relational database, enhanced flexibility of use, and Prestel-compatible video data software — all for 80% of the cost of a comparable 2903 system.

The microcode instruction rate is 3 million per second, but the processor speed is about the same as that of the 2903. The ME29/45 model offers about 80% more power and is offered as a field-upgrade. This is achieved in the same way that the 2903 is turned into a 2904 — by adding a single board which replaces a microcoded instruction prefetch with hardware pre-fetch.

The processor is built in TTL

and uses 16K-bit memory chips. Main memory ranges from 84K to 256K words, though ICL has decided to limit the size of bytes for the ME29, giving 256K to 1 megabyte.

In competitive terms, ICL says that the ME29 covers the power range of the IBM System 34 through the System 36 to just above the IBM 4331. ICL claims that at each level the ME29 is priced a little lower than its IBM

counterpart.

A wide range of the new disc drives is offered with the ME29, but if users want to transfer their EDS 60s, they will continue to need a full air-conditioned environment. The other drives range from a 35-megabyte fixed unit through a 60-megabyte exchangeable drive to 120 and 500-megabyte units. The 35-megabyte drive goes on a separate channel, and up to 16 drives can be supported in two

units.

The new processor is a 32-bit word machine, which for the ME29 is microcoded to emulate the 24-bit word of the 2903 series. The full 2903 series instruction set is included, but has been extended with additional instructions. It is built around a data highway much faster than that on the 2903 series, so that ICL claims up to five times the input-output data transfer capacity of the 2904 on the smaller ME29/35 model.

Main store is now created as a peripheral on the data highway, and a reliability innovation is the incorporation of a single-board diagnostic processor driven by an Intel 8080 micro.

This enables the user to go through basic diagnostic routines, and telephone the results to an engineer who should then be able to advise on a remedy or call with the appropriate board for replacement.

The ME29 effectively makes

EASE of use is the principal aim of the new software offered with the ME29. It comes with a new operating system, TME, for Transaction Machine Environment, which will run all 2903/4 programs unchanged. However some adaptations will be necessary to these to make full use of the facilities, particularly for teleprocessing. In TME, in particular a change from the 2903 MTS interface. But MTS is also supported.

Most striking feature on the networking front is the addition of facilities comparable with those offered to terminal computers attached to an IBM SNA network. Users at an ME29 terminal can, for example, run a job on a 2900 mainframe under VME/B. IBM communication

remains standard 3270 simulation.

ICL considered turning the ME29 into a full SNA-compatible terminal computer competitive with the 8100, but decided that the size of the market did not yet justify the development effort.

The first fruits of an ICL relational database development project have emerged with ME29 in the form of PDS. Personal Data System. This is a limited personal database designed for use by non-specialists.

It allows, for example, a manager with a workstation in his office to do modelling or for a scientist to do statistical analyses while the machine is concurrently running the day-to-day workload.

Programmer productivity should be enhanced by Dialog, a facility which enables users to interface directly to the language compilers from a workstation, allowing them to use the screen and text editors to amend the source code. Interaction is via

standard forms which can be called up on the display screen.

Among the 2903/4 facilities offered are concurrent word and data processing using Wordskill and the Wordskill Manager packages, which support electronic mail using the ICL 7700 word processor; full IDMS and the IDMS-E subset;

the DDS data dictionary; and the new Range Cobol will be the standard Cobol compiler for full compatibility with larger 2900 systems.

Versatility at low cost

The microcode instruction rate is 3 million per second, but the processor speed is about the same as that of the 2903. The ME29/45 model offers about 80% more power and is offered as a field-upgrade. This is achieved in the same way that the 2903 is turned into a 2904 — by adding a single board which replaces a microcoded instruction prefetch with hardware pre-fetch.

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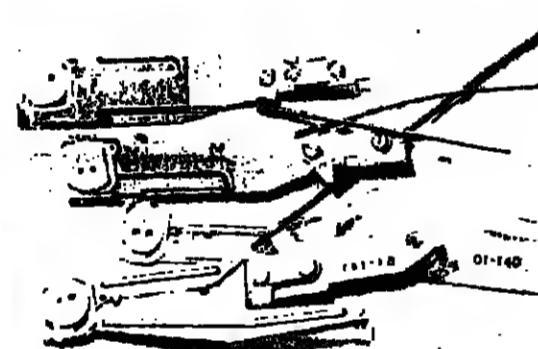
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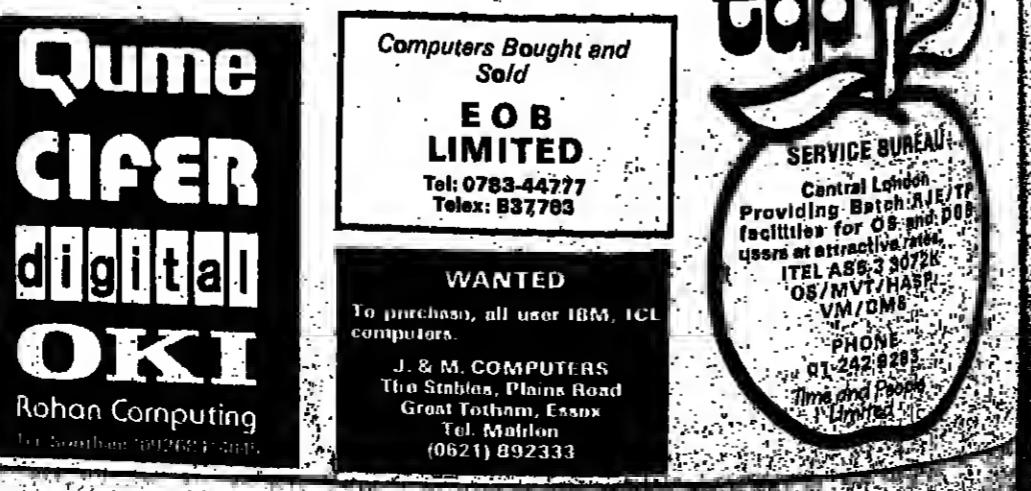
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PRODUCT NEWS

Productivity boost for WP system

AN OCR page reader which is said to improve radically the productivity of word processing systems, has been introduced by Lexiscan.

Called Context 1210, it enables original typed pages to be read and stored directly into the WP's memory, thus bypassing the keying stage.

Manufactured by Burroughs,

Cleaning kit from 3M

A CLEANING kit for use with electronic recording, office and computer equipment is available from 3M.

It is CK-90, and 3M says it has been designed to remove contaminants and debris from components of magnetic recording

the Context 1210 can be loaded with up to 50 pages at a time and scans about 250 pages an hour, says Lexiscan.

Copy can be prepared on any single element typewriter that has an OCR-B font. The author then marks corrections before handing the copy over to the operator who, after input, corrects the page as per copy, says Lexiscan.

Alternatively, it can be supplied with a diskette or cassette writer to allow off-line media conversion. A range of interfaces is available as well as dedicated media writers for older equipment.

Conversion from one storage medium to another is achieved by tying the output and then passing it through the Context 1210, says Lexiscan.

Equipment, but can be used for computers and other electronic equipment. It costs £11.50.

Data Products Group, 3M United Kingdom Ltd (CW), 3M House, PO Box 1, Bracknell, RG12 1JU. Tel: 0344 55502.

Elan Digital Systems Ltd (CW), 27-28 Newbury Street, London, EC1A 7HU. Tel: 01-808 3652.

32K-word add-in card for LSI-11s

FROM Dialogue Marketing comes a high density add-in expansion module for the Digital Equipment LSI-11, LSI-11/2, PDP 11/03 or Hootch Kit H11 systems and it requires one option slot for 32K words of memory.

The CI 1103 is available with either an on-board distributed refresh or external refresh. It comes in 8K, 16K or 32K configurations and is addressable in 2K increments up to 128K. The 32K configuration costs £840.

Dialogue Marketing (Electronics) Ltd (CW), Unit 11G, Rose Industrial Estate, Bourne End, Bucks. Tel: 06285 28729.

EPROM programmer

A UNIVERSAL production EPROM programmer/fault locator, Model P20, has been announced by Elan Digital Systems of Crawley, Sussex. The P20 gives English language visual instructions to the operator which, Elan says, tells him what is happening, when it happens, why a fault has occurred and what the fault is.

It is supplied with personnel cards to handle current EPROMs (4K to 32K) from most major manufacturers. Up to 10 EPROMs may be programmed simultaneously. A plug-in option allows up to 20 at a time to be programmed.

A single key operation allows faults to be isolated and displayed for comparison, says Elan.

Eln Digital Systems Ltd (CW), 10-20 Kelvin Way, Crawley, West Sussex. Tel: 0293 510468.

Lowndes-Ajax services

THREE brochures from Lowndes-Ajax Computer Services give details of its financial planning and accounting services.

The first is on Simplan, a multi-purpose planning, budgeting and modelling language developed for managers, planners, accountants and analysts but can also be used by people with no DP experience, says Lowndes-Ajax.

The second is for monitoring the payment of debts and the third is about its general ledger systems. All the brochures explain how these systems work as well as their various uses.

Lowndes-Ajax Computer Service Ltd (CW), Milton House, Milton Road, Croydon, CR0 2XG. Tel: 01-689 2244.

5.2 mbyte disc

A DISC cartridge with a capacity of 5.2 megabytes that is compatible with Digital Equipment top load drives has been introduced by Nashua.

Certified at 3,725 bits per inch, the cartridge is configured with 40 sectors and 256 cylinders. Opening and closing of the cartridge is via a single function handle.

Computer Products Division, Nashua Corp (CW), Cory House, Bracknell, Berks. Tel: 0344 62711.

Micro development kit

TEKTRONIX has introduced software development and debugging packages for the Zilog Z8000 and Intel 8088 16-bit microprocessors. One for the Motorola 68000 will be available in the autumn.

Initial offerings will include assembly and prototype debug packages that can be downloaded from ITT Business Systems.

High time prototype analysis and in-circuit emulation will be

provided through a peripheral unit to which programs can be downloaded from the Zilog 802A and Intel 8088 MDI.

The unit will support 8088

28000 and 8080 chips.

Tektronix says it is currently working on Parallel port as well as high level languages for each new in-circuit emulator for each new processor.

Tektronix UK Ltd (CW), Cory House, PO Box 66, Hemel Hempstead, Herts. Tel: 0823 82111.

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Laura Latham looks at voice response in action



Speeding up crisp deliveries to shops

EVERY year Britons munch their way through £300 million worth of potato crisps, salted nuts and other packaged snacks. Competition for this rich market is brisk and for two main reasons the race tends to go to the swiftest.

First, freshness is all-important and product shelf life comparatively short. Second, though many people may prefer a particular brand they will usually settle for another when it is not available.

For Golden Wonder, which manufactures these delicacies at several different sites and distributes through 13 depots all over the UK, including Northern Ireland, the 72 to 96 hours that used to elapse between receipt of orders and delivery to customers was too long. For that reason it set up the system it calls SOLD, Sales Order Logging and Distribution, which can cut that period to 48 hours.

The speed-up was achieved by incorporating an MCS voice response system into existing online computer procedures.



Our picture shows Jackie Rowan, the voice of MCS's voice response system. In the middle of a recording session, some words may be repeated to give the correct intonation, depending upon that position in a sentence.

Potato crisps, the company's biggest selling line, are made at several factories, each of which serves a group of depots in its area. Three other factories also serve all the distribution centres.

Because the products are relatively perishable, depots turn over their inventories very quickly.

"Though sales and market forecasts are used to determine the outline production plan, the daily pattern is governed by very recent orders. The faster these can be recorded and summarised, therefore, the better the match between output and customer requirements. Also, because machinery must be thoroughly cleaned between changes from one flavour of crisp to another, fast accurate short-term order information may bring an economic advantage during this period of time.

To speed up depot processing, Data General Nova 2s were installed at each location and orders were keyed in through local VDUs, updating the database. The information was then used to prepare picking lists and load summaries.

Although this system was a significant improvement, the problem of keeping the customer files up-to-date still remained. The solution was the development of online systems on the head office ICL 1900 using ICL Applications Manager ("a

superb piece of software," says Stuart Shuttleworth, Golden Wonder's management services manager).

In the past, customer details were pre-printed on order forms with metal address plates. Every day, each salesman mailed his order to the depot and these, along with those taken by the tele-sales girls, were processed locally and sent to the Market Harborough computer centre after delivery. Batch processing on an ICL 1900 prepared in voices".

The system's pleasant feminine voice then requests in succession the customer's account number, order number and product codes and quantities. The system applies check digit verification and field credibility checks and validates each entry against the database before accepting the next. Provision is also made for entering details for new customers and for amendment of existing detail such as delivery instructions. There is a playback facility for the user who has "lost his place" owing to an interruption or thinks he may have forgotten or entered an item.

"When the directors asked us to find a way to speed up order turnaround yet more, we looked into several different approaches," Shuttleworth said. "These include two voice response systems. After visiting some US installations of the Periphronics system marketed in Britain by Menzies Communications Systems, we came to the conclusion it was the more flexible. We wanted to keep our options open and, for example, be able to attach VDUs to it if we wanted.

"Of all the systems we had seen voice response was the least expensive at £72,000 for the particular set-up we wanted (though this also involved use of the existing Nova 2s). The starting price of the others worked out near the quarter-million mark."

Reliability was also a major consideration for Golden Wonder. It uses the simplest form of MCS processor (which has its own built-in redundancy) as a front-end, feeding to the pair of Nova 2s at the computer centre. Each has 64K of main memory, 10 megabytes of store split between a fixed and a removable disc, and a nine-track tape. The two are completely switchable.

The mainframe is not involved at any stage of order recording, though it does prepare on tape copies of the most recent customer and price file used by the Novas for checking purposes. In the event of mainframe failure, however, the previous day's file could be used with little disruption.

In Golden Wonder's application, however, the number of responses is sufficiently small to allow the use of complete pre-recorded sentences. This feature — unique to MCS — considerably improves the quality of delivery.

Periphronics, the manufacturer of the system marketed here by Menzies Communications Systems, is a US company, so voice recordings are prepared in New York.

The speaker for British companies is Jackie Rowan, a young American actress who, having

Complete sentences improve speech quality

THE voice of the MCS voice response system is not electronically synthesized, but human. For applications that demand a large repertoire of responses, each is created by stringing together a different combination from a vocabulary of separately pre-recorded words, giving a slightly robot-like effect.

In Golden Wonder's application, however, the number of responses is sufficiently small to allow the use of complete pre-recorded sentences. This feature — unique to MCS — considerably improves the quality of delivery.

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been on my mind," she says.

The low-cost portable MCS terminal has a numeric keypad and a few control buttons and can transmit via a telephone through an acoustic coupler. Al-

The short shelf life of crisps means that every effort must be made to get the orders in fast. This means that traditional orders given to the salesman are out and some direct interface with the computer is in.

Golden Wonder picked a voice response system marketed by Manzies Communications. Laura Latham takes us on a tour of the system.

addresses, product descriptions and prices are added from the database.

The system then automatically rings the depots in turn and transmits the data for storage on the discs of the local computers.

These add to the new entries that were not delivered the previous day and plus warehouse picking lists. The user prepares a complete schedule of orders for the road planning staff who, after working out delivery routes, enter the detail into the Nova which creates a load summary. Customer invoices are prepared on the ICL 2956 at the computer centre.

Incorporation of the MCS voice response system into Golden Wonder's online order processing has successfully achieved the prime objective of faster turnaround of customer orders and a further 10 MCS terminals have now been ordered to extend the system.

CAD 80 will run from March 31 to April 2, with registration on the morning of the first day, or the preceding evening. It will be held in Brighton, at the Metropole on the seafront; and registration is £55 per day, or £115 for the three days. Both figures are exclusive of VAT but inclusive of lunch and the complete conference proceedings.

Formal may be obtained from the Conference Secretary, CAD 80, IPC Science and Technology Press, PO Box 63, Westbury House, Bury Street, Guildford GU2 5SH.

There will be an exhibition of CAD-related hardware with the conference and a series of papers will be presented by system suppliers.

The conference and exhibition are organised by the Journal Computer-Aided Design with sponsorship by Computer Weekly.

The fourth international conference and exhibition on computers in engineering and building design, CAD 80 is aimed at bringing together research workers and industrial designers in an atmosphere conducive to the interchange of information and experience.

Such is the broad spectrum of CAD interests that the three-day conference is divided into three parallel sessions dealing with basic techniques, industrial experience and applications (research and development). In these categories individual sessions deal with the various subjects areas and in the following description selected papers are referred to show the basic themes.

1. Methodology, management and standards.

These sessions present papers describing some generalised approaches to the techniques

and problems of CAD. Papers presented cover the role of the engineer in the development of the CAD system itself and at the other end of the scale the control of design errors using syntactic constraints in a normally general programming language. Aspects of structured programming as they apply to the writing of CAD systems are considered.

The topic of management is covered from two points of view.

First, there is a discussion of the effects of CAD on the overall design environment and how it affects the organisation of the design team. Second, the requirement for internal management mechanisms in the CAD system itself is described.

2. Graphics and Databases.

The consideration of graphics embraces both the hardware

and software aspects.

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Problems that used to be insoluble

by Phil Cheetham

THE application of CAD techniques in engineering areas such as structural design is a discipline which in recent years has seen an increasing convergence between the improvements in mathematical modelling techniques, developments in graphics and a greater understanding by the engineer of the extent to which CAD enables more comprehensive structures to be designed.

In fact, the influence of computers on the solution of struc-

tural engineering problems is probably greater than in any other field of engineering, and has even enabled problems to be solved that were insoluble before.

The use of computers in the analysis of structural problems provides numerous advantages to the engineer in the performance of design work. Detailing aids and drawings for certain types of structure may be obtained to offset the high cost of technical draughting and/or automated draughting and



The Westland Lynx helicopter which was structurally designed using finite element techniques.

automated design.

Data generation techniques produce masses of bulk data to be input to large systems through the interactive use of graphics display terminals and digitisers. Here the engineer uses a drawing and digitiser to define numerically the component — for example, a building, part of a plant, or a structural component — and a computer program is utilised to create the input data for a larger program.

much of the economic advantage of mini-based processing for the organisation.

Among the many CAD techniques available which provide powerful design solutions for the structural engineer are finite element programs. These are used to represent redesigning situations by a series of finite elements joined together at node-points which define the geometry of the problem. The finite elements themselves are defined so that their behaviour can be related to the nodes by equation systems.

Unfortunately, the accuracy of the equation is often a function of the shape of the element as prescribed by the geometry of the problem. Also, some elements are more invariable to geometrical distortions than others. Many finite element systems, however, have incorporated numerous types of elements, often without due regard to the behaviour of the elements in different shapes and under different conditions.

Work is now proceeding to introduce standards on which elements can be tested to create, say, ratings under different conditions so that engineers can select appropriate elements and systems for given tasks.

Constant development in the area of graphics will have an increasing effect on the productivity of automated design, particularly in the ability of remote terminals to access more economically the large general-purpose design systems. In the past it has not been economic for many aspects of engineering design to be carried out interactively using remote access, for it is not only the large systems, but much of the graphical generation which has to be held on the mainframe for access. This has been due to high line costs of communication to the mainframe and the high data volumes involved when using what have been relatively dumb terminals. Already this situation is being partially relieved by improvements in distributed processing.

Further developments will enable the use of microprocessor-driven intelligent terminals with their own software capable of handling much of the graphics generation. This will reduce the amount of data that needs to be transmitted from a central processor and will make engineering design much more economic for smaller, yet complex projects.

Such developments will also take some of the pressure off those areas where the large mainframe, which is having a big impact on engineering computing, has had tasks transferred to it which create more problems than are overcome.

For example, an individual department may have a constant need to utilise a particular large engineering system and thus may have it transferred from the company's mainframe to its own departmental main. However, data within the system is frequently of a common nature, and required by other departments who ready access to such information is prevented. This does away with

stages of a highway project, from the reduction of survey data to the production of computer-drawn contract drawings. Computer-aided design techniques are used at each stage of the job. Professional staff can take full responsibility for all aspects of the computing work but leave control of the design process in the hands of the client.

The programs also give the designer an indication of how often "pigging" (sending a solid object along the pipeline to clear the accumulated liquid) will have to be carried out.

The effects of changes in either the feedstock or feed delivery pressures and therefore the pressure to be used for designing the pipeline, can be predicted. Information on power needed to drive various items of equipment such as pumps and compressors is also produced.

Pipeline planning is also covered by this specialised software.

Pipeline sizes can therefore be selected, for example, to allow for the formation pressure of an oil/gas well dropping over a certain period of time.

Instrumentation and control of complex pipeline systems is also becoming a demanding task for the engineer, especially when an action has to be decided upon in an emergency. This software allows the engineer to model and study the effects of the proposed control strategy.

For example, if a valve is shut onshore, will this rupture the pipeline? Will the compressor "trip" (stop, because the pressure wave has exceeded the manufacturer's limit)?

Today, the engineer can obtain answers to his questions, without having to make assumptions, with greater accuracy and ease by simply dialling into a technical service bureau.

Large computer service bureaux can also offer a comprehensive and time-saving approach to the design, analysis and construction of piping systems. Design formerly involved the drawing office; individual drawings were difficult to find and to alter.

Now, however, the Dis system is available. It stores drawings electronically and can operate interactively as well as in batch.

Dis can merge different drawings, or change the scale of the drawings very quickly. It provides a database of drawings

immediately include:

What size should the pipe be? For what pressures should the pumps be sized? Will the gas, as it goes down the pipeline cool and condense? If so, will the resulting increase in pressure drop be acceptable? If an emergency forces value to shut, will the resultant shock wave cause pipe rupture?

Before specialised CAD com-

puter software became available through bureaux, engineers at large were extremely limited.

There were some specialised software programs written by experts, but they were difficult to comprehend and costly. In addition, they were limited in capabilities to only relatively simple calculations. Many engineers still perform calculations by hand and are thereby marked.

Plots from Dis/Adipipe can be drawn either on an electronic plotter or a Tektronix tube or a flatbed plotter and can be of any

size.

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LSI 2401-a 2400 bit/s V26 compliant modem for

asynchronous point-to-point or multidrop operation over leased lines. It is also available either in table-top form or as a vertical card for high-density central office packaging.

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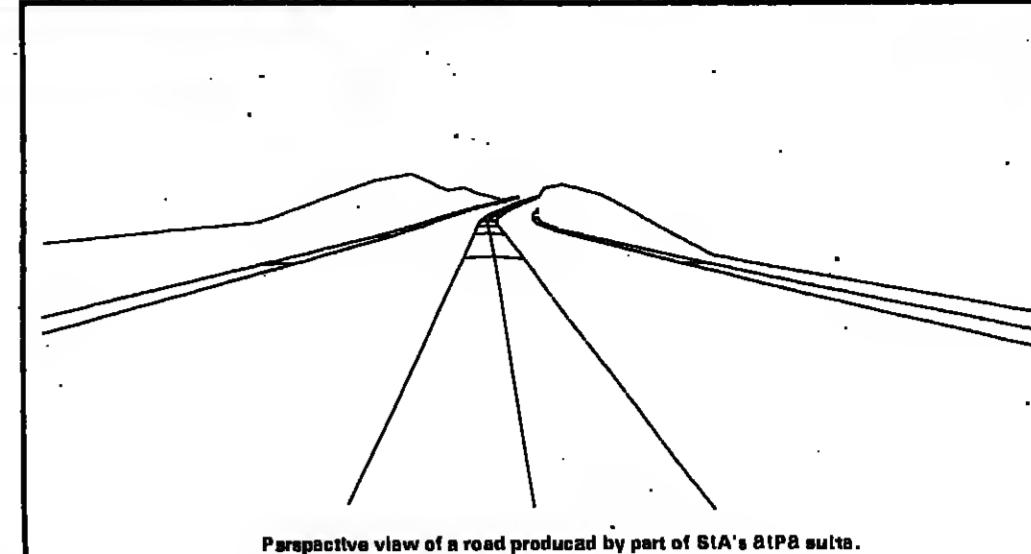
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The engineer's questions answered, fast

by Terry Mitchell



Perspective view of a road produced by part of SIA's BIPE suite.

user defined size. Multiple levels of detail are available, from simple check isometrics to fabrication drawings with maximum detail.

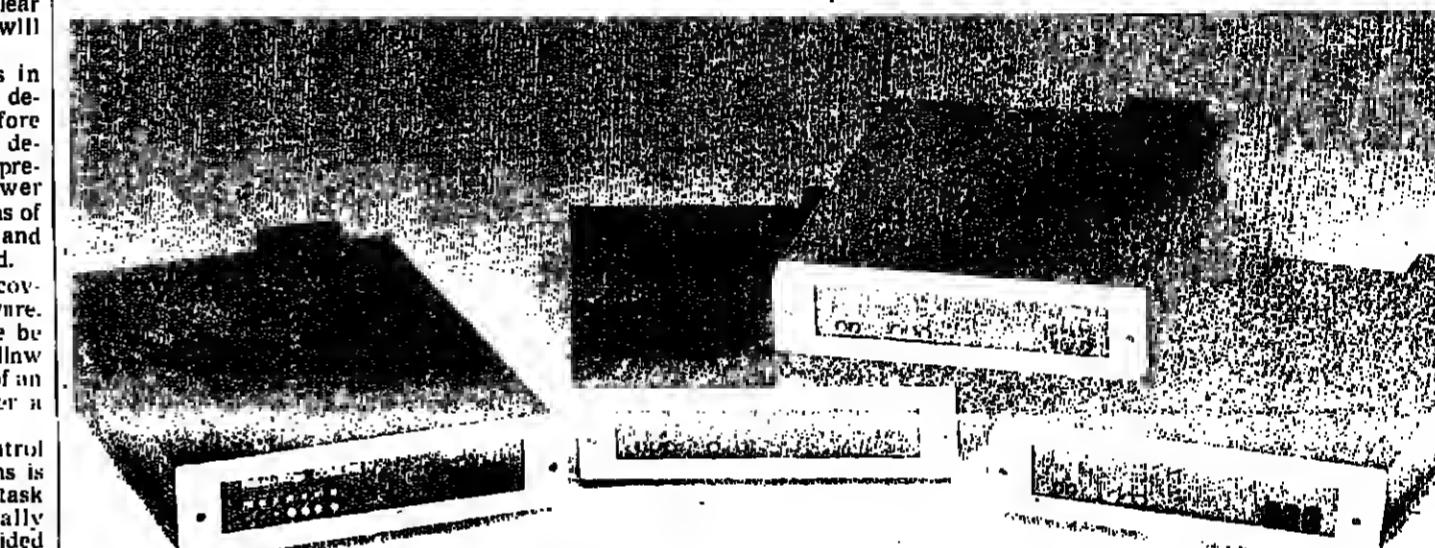
Structural analysis is an important CAD area for certain specialised service bureaux. Programs which calculate the temperature of a gas or oil at each stage of its journey along the pipeline. It can be easily predicted if or when the gas will cool sufficiently to condense and thereby result in damage to compressors.

Another important CAD area is the design of highways. Some bureaux offer a service encompassing all the major design

stages of a highway project, from the reduction of survey data to the production of computer-drawn contract drawings. The ability to incorporate effects such as bus laybys, slip roads, junctions, roundabouts and interchanges is also provided for within some specialised software products.

A further application of CAD

is in electronics. The simulation of electronic circuits and the design of printed circuit boards. A user of the circuit analysis system Astec is the European Space Agency, which has used it for the simulation of the latest European space project, and the Royal Aircraft Establishment has used Astec for simulating Concorde's electrical system. Domino can automatically route connection tracks for PCB types, and produce quality plotted board design output. Major design time and cost savings can be achieved.



Terry Mitchell holds an honours degree in naval architecture and mechanical engineering, and for 10 years worked at the National Maritime Institute. He is now head of structural and marine engineering at SIA.

minals and expert support, these computer service bureaux can deliver complete CAD facilities to engineering firms at low capital cost.

CAD applications areas and products include structural, automotive, aerospace, offshore, mechanical, highway, electronic and process engineering.

In the areas of oil, gas, chemical and petrochemical process plant design, some specialised service bureaux offer software which can handle the complete thermodynamic simulation of almost any process and plant units involved. The process design engineer can therefore study the process behaviour of the entire plant during the design phase, comparing and testing alternatives to obtain an economical solution.

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answer his questions,

without having to make assumptions, with greater accuracy and ease by simply dialling into a technical service bureau.

Large computer service

bureaux can also offer a comprehensive and time-saving approach to the design, analysis and construction of piping systems. Design formerly involved the drawing office; individual drawings were difficult to find and to alter.

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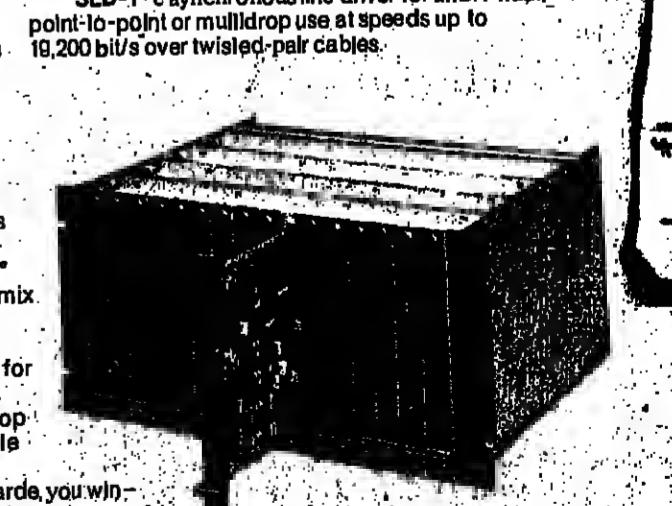
asynchronous point-to-point or multidrop operation over leased lines. It is also available either in table-top

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High resolution for a fraction of the cost

by Howard Rippiner

THE whole subject of computer-aided design has been revolutionised in recent years by the availability of sophisticated graphics systems. Whereas in its early days computer-aided design was limited to number-crunching applications or fairly elementary plots based on numerical data, nowadays the designer has a host of terminals and complete interactive graphical computing systems which allow him to manipulate in any number of ways.

Not all computer graphics systems are applicable to design,

use, of course (some are specifically designed for use in business systems, for example), and this article reviews the categories of hardware that are available and the relevance of particular features in the needs of the designer.

The initial work on computer-aided design was carried out using large mainframe computers, and the first computer hardware developed specifically with the designer in mind was the graphics terminal designed for use with a mainframe computer. At first, the

equipment required to make graphic displays from a computer was extremely expensive, and it was not until the development of the bistable direct-view storage tube that the market for relatively low-cost graphics terminals was really opened up.

The direct-view storage tube provides high-resolution, high-density graphics by storing images directly on the faceplate of the cathode-ray tube, eliminating the need for image regeneration. It also does this at low cost; when the first graphics terminal using this approach was introduced in 1971, it was one-tenth of the cost of its nearest previous rival.

This initial terminal had an eleven-inch screen (measured diagonally), which tended to restrict its use to fairly simple design applications in areas such as printed-circuit-board layouts, architecture, mechanical engineering, and numerically controlled part programming. Even so, these early devices are still a mainstay of the computer-aided design industry, and have formed the starting point for many large graphics installations.

The latest developments in this area have been stimulated by the use of bit-slice microprocessors, which in effect offer the speed of a minicomputer with the cost advantages provided by the micro. The new systems provide computational speeds at least an order of magnitude faster than the first desktop graphics computers, plus larger memory capacities and speed enhancements to the graphing facility using extended BASIC. In addition, faster transfer of data is made possible by RS232 and IEEE 488 (GPIB) interfaces.

For applications where the microprocessor still does not offer enough power or speed, minicomputer-based systems are now available. These systems have been designed to work effectively as terminals in a host-computer environment, or with the aid of internal programming tools, as highly flexible, standalone graphics systems. A system of this type makes use of distributed processing principles to achieve lower communication costs, lower host computer charges, and more effective man-machine interfaces.

The latter provides a higher resolution capability which in itself leads to new application areas — integrated-circuit design, more complex PCB layouts, mapping, airframe design, buildings and allied structures — but at the same time the larger terminals offer more comprehensive facilities, such as a variety of hardware-generated character sizes and different line types.

In recent years, the increasing demands from the marketplace for still higher resolutions have led to the availability of 25-inch screen terminals, intended for use in applications such as VLSI design, mapping and network modelling.

As with most types of electronic hardware, these graphics terminals have benefited from the advent of the microprocessor. For example, on terminals with the intelligent graphics option enhancement, local intelligence and various storage capabilities can be built in. This means that the user can call up local macros consisting of standard, regularly used shapes (window frames in buildings, for example), and can also carry out local picture editing.

The next step upwards in intelligent systems is to build all the intelligence into an integrated desktop computing system, and about four years ago the first desktop computers with built-in graphics started to appear on the market. The first machines had resolution levels similar to those of the first generation of graphics terminals described above, but had the added feature of a 64K processor and the facility to use a high-level language.

The "friendly" high-level language used in these systems provides both the power and ex-

perience required to make graphic displays from a computer and the simplicity desired by the beginner. Input and output commands are easy to program and debug because the commands use device-independent keywords. Commands like DRAW and ROTATE allow the user to work in his unit rather than machine or raster units.

The availability of this type of desktop graphic computer system has really stimulated the big move into computer-aided design systems which are independent of a host computer.

With these systems, the computer-aided design user, particularly in the smaller consultancy, can have access to a reasonable amount of inexpensive processing power in his office, and may also link into a mainframe computer or time sharing bureau for very heavy number-crunching applications.

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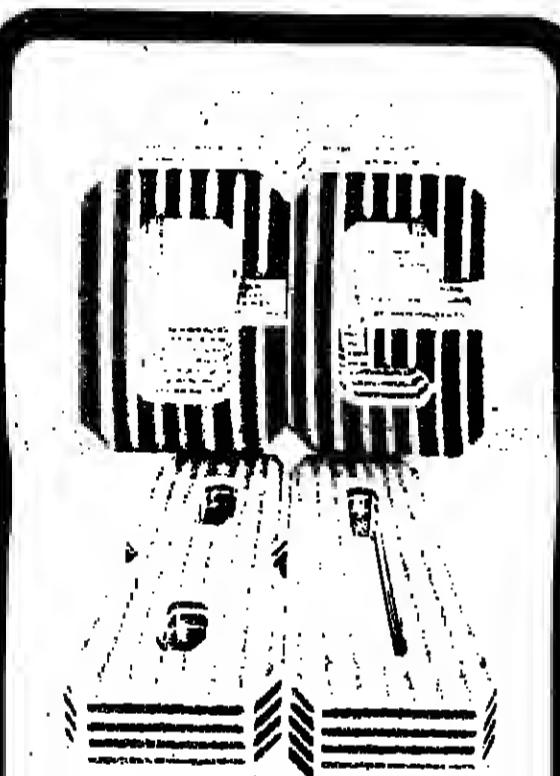
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Argyll House, Joel Street,
Northwood Hills, HA6 1TS
Tel: Northwood (09274) 282111.
Telex: 923498

perienced programmer needs and the simplicity desired by the beginner. Input and output commands are easy to program and debug because the commands use device-independent keywords. Commands like DRAW and ROTATE allow the user to work in his unit rather than machine or raster units.

The availability of this type of desktop graphic computer system has really stimulated the big move into computer-aided design systems which are independent of a host computer.

With these systems, the computer-aided design user, particularly in the smaller consultancy, can have access to a reasonable amount of inexpensive processing power in his office, and may also link into a mainframe computer or time sharing bureau for very heavy number-crunching applications.

The latest developments in this area have been stimulated by the use of bit-slice microprocessors, which in effect offer the speed of a minicomputer with the cost advantages provided by the micro. The new systems provide computational speeds at least an order of magnitude faster than the first desktop graphics computers, plus larger memory capacities and speed enhancements to the graphing facility using extended BASIC. In addition, faster transfer of data is made possible by RS232 and IEEE 488 (GPIB) interfaces.

For applications where the microprocessor still does not offer enough power or speed, minicomputer-based systems are now available. These systems have been designed to work effectively as terminals in a host-computer environment, or with the aid of internal programming tools, as highly flexible, standalone graphics systems. A system of this type makes use of distributed processing principles to achieve lower communication costs, lower host computer charges, and more effective man-machine interfaces.

The latter provides a higher resolution capability which in itself leads to new application areas — integrated-circuit design, more complex PCB layouts, mapping, airframe design, buildings and allied structures — but at the same time the larger terminals offer more comprehensive facilities, such as a variety of hardware-generated character sizes and different line types.

In recent years, the increasing demands from the marketplace for still higher resolutions have led to the availability of 25-inch screen terminals, intended for use in applications such as VLSI design, mapping and network modelling.

As with most types of electronic hardware, these graphics terminals have benefited from the advent of the microprocessor. For example, on terminals with the intelligent graphics option enhancement, local intelligence and various storage capabilities can be built in. This means that the user can call up local macros consisting of standard, regularly used shapes (window frames in buildings, for example), and can also carry out local picture editing.

The next step upwards in intelligent systems is to build all the intelligence into an integrated desktop computing system, and about four years ago the first desktop computers with built-in graphics started to appear on the market. The first machines had resolution levels similar to those of the first generation of graphics terminals described above, but had the added feature of a 64K processor and the facility to use a high-level language.

The "friendly" high-level language used in these systems provides both the power and ex-

perienced programmer needs and the simplicity desired by the beginner. Input and output commands are easy to program and debug because the commands use device-independent keywords. Commands like DRAW and ROTATE allow the user to work in his unit rather than machine or raster units.

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Howard Rippiner

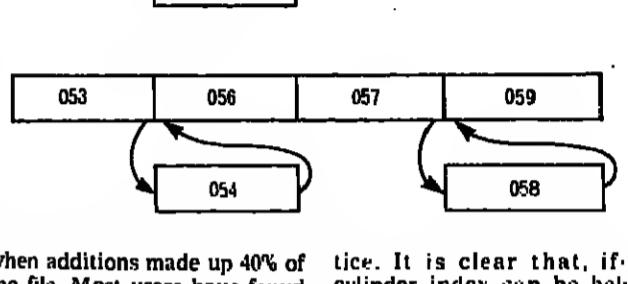
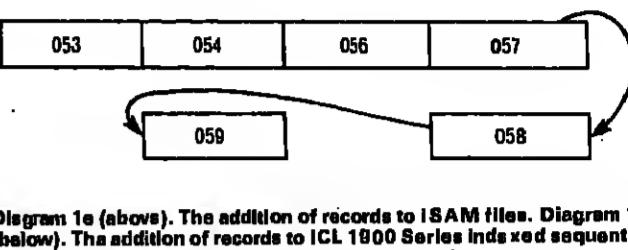
ADVANCED FILE DESIGN—Part 8

Processing indexed sequential files

by Owen Hanson and Norman Revell

053 056 057 059

053 054 056 057



when additions made up 40% of the file. It is clear that, if the cylinder index can be held in main storage, large batch sizes are required to justify batching and sorting. By comparison, a file that has the cylinder index on the same device as the rest of the file will not justify updating even for small batches.

The very small effects of sort time should be noted. The sort of an indexed sequential file can be carried out directly often, encourages users to do this. It is true that the need to batch updates and then sort them into order is avoided by this means. However, direct updating of the file is inherently slower for large numbers of records.

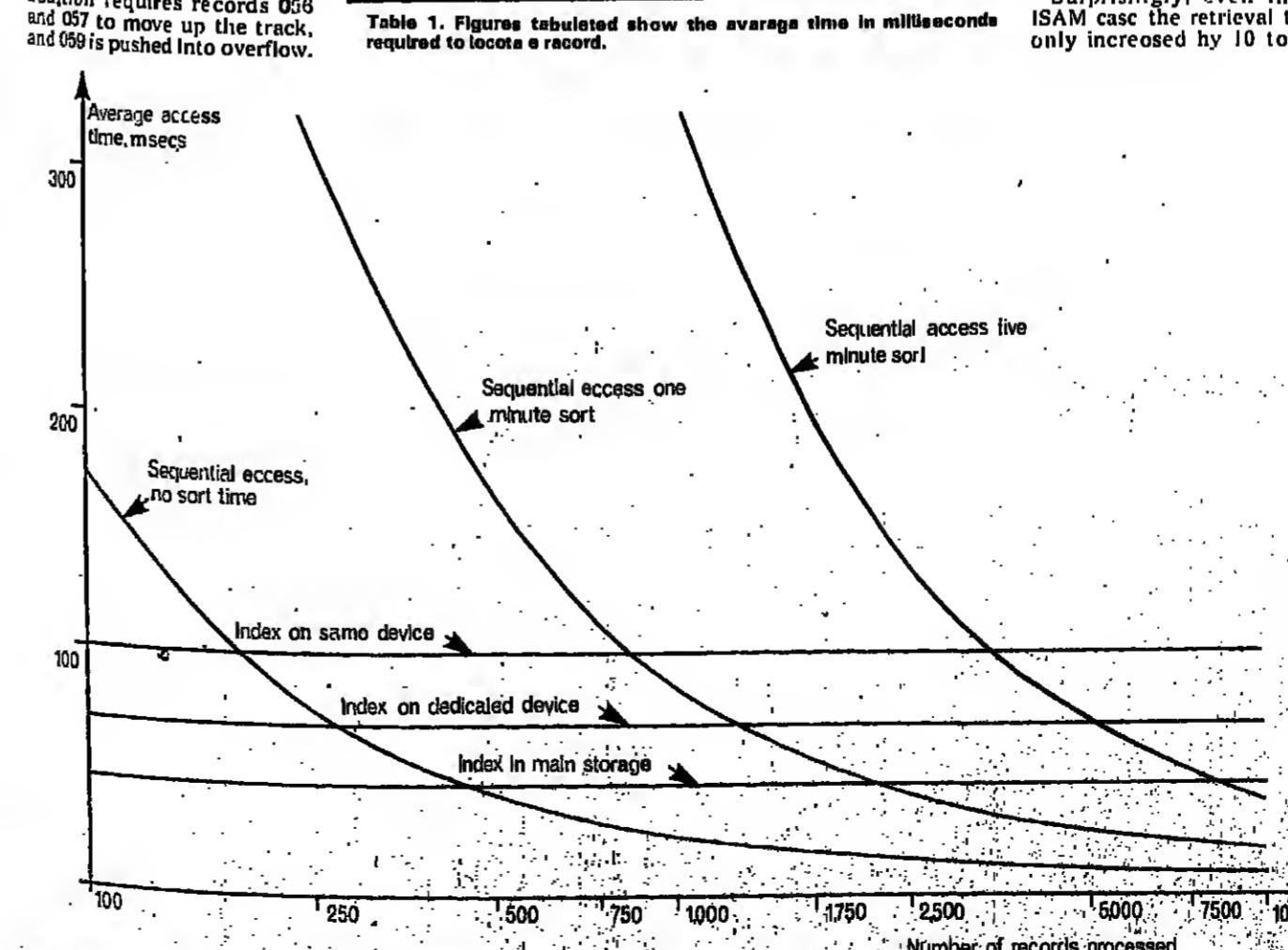
A decision between the two strategies should be based on the size of batch that can be made up. In cases such as paying through the post, this provides a natural batch size, increasing it by processing only every second or third day. This imposes an unnecessary delay that should be taken into account in the decision. The storage device used for the file and the time taken to sort updates will also be important.

The situation has been analysed for an IBM 3330 disc. Table 1 gives the figures presented in this analysis and Diagram 2 shows what this means in practice.

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Diagram 2. This graph shows the times involved in locating records using various indexing methods.



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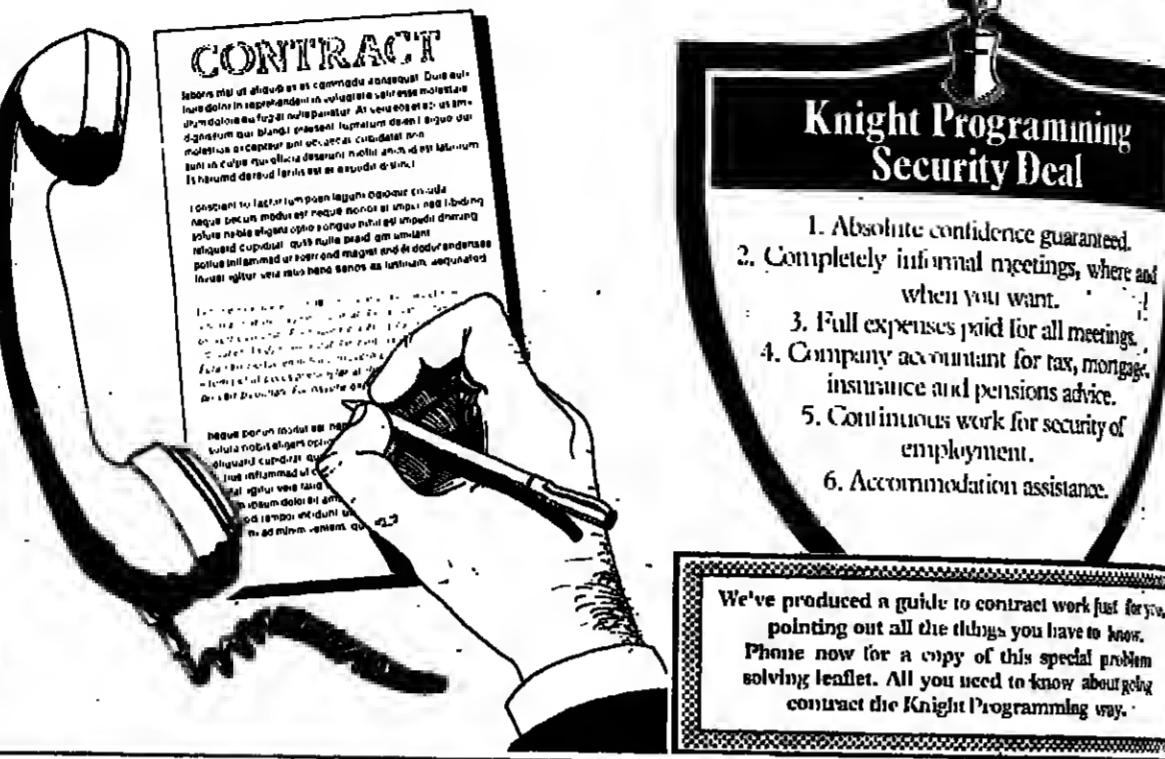
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Product Introduction Software

To lead a team engaged in releasing for customer use, newly developed or modified software, ensuring that standards are maintained and that the operations handbook conforms to the product. The team is also responsible for integration of existing released software into new operating systems.

Candidates must have supervisory experience coupled with a high degree of investigative ability. In-depth Assembler experience is preferable.

Contact: Mike Creamer

JAMES BAKER ASSOCIATES, International Personnel Consultants,
32 Savile Row, London W1. Tel: 01-439 9311.

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To lead team of programmers engaged in investigation and rectification of released software, monitor progress of all fault rectification and produce management information for distribution to customers. On occasion, the team is expected to provide field support on difficult system faults.

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Contact: Margaret Stevens

German Speaking Programmers and Analysts

All locations in Germany
Sal. Nat. rates
Our client, an established German Services organisation have been recently overwhelmed by requirements for experienced d.p. professionals who have a command of the language - at least at conversational level. Of particular interest will be Programmers or Analysts with experience of any mainframe systems, either applications or transaction oriented. There are a variety of locations and types of organisations to consider and in some cases employment can be either permanent staff or long term contractual.

Contact: Mike Cremer

Dutch Speakers

Central Holland
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A range of experience is sought - e.g.: a Project Leader with good ICL 1900 and PLAN expertise through to Analyst/Programmers with IMS/DLI COBOL experience. Phone for more details of the employment packages available and a discussion of the types of project you are seeking.

Contact: Andy Wright

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A small, specialist Dutch company has several requirements for experienced database designers and analysts in work on new, advanced development projects. Duties will range from corporate systems strategy studies, through to technical design and project management so obviously candidates must have at least 7-10 years d.p. experience in all.

For most technical expertise must be a database design - e.g. DMISD/IIDO, IDMS, IDSS, DMIV etc. and should include sound T.P. and on-line systems design. Applicants without project or team management experience are acceptable but will be expected to possess extremely good technical knowledge.

Contact: Andy Wright

2960 - Senior Programmers

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Contact: Bev Stevens

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Contact: Mike Cremer

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Contact: Mike Cremer

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Contact: Jim Baker

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PROGRAMMERS

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|---|--------|
| (DR/917) 15 + months ICL COBOL environment | £ 5400 |
| (DR/918) 15 + months ICL/Honeywell COBOL environment | 5800 |
| (DR/919) 15 + months large IBM site (COBOL/ASSEMBLER preferred) | 5800 |
| (DR/920) 15 + months commercial ICL environment | 5800 |
| (DR/921) 18 + months ICL on-line COBOL experience | 5700 |
| (DR/922) 18 + months IBM COBOL programming experience | 5700 |
| (DR/923) 18 + months software house position, car provided | 5800 |
| (DR/924) 18 + months most mainframe analyst/programmer background | 6300 |
| (DR/925) 18 + months financial IBM COBOL environment | 6500 |
| (DR/926) Mini sales support position, car provided | 7000 |
| (DR/927) 2 + years Burroughs environment | 6500 |
| (DR/928) 2 + years ICL COBOL environment | 6500 |
| (DR/929) 2 + years IBM analyst/programmer (financial background) | 6800 |
| (DR/930) 2 + years IBM position - COBOL and/or ASSEMBLER | 6900 |
| (DR/931) 3 + years Burroughs COBOL (MCPIV) | 7000 |
| (DR/932) 3 + years senior IBM position (ASSEMBLER background) | 7000 |
| (DR/933) 3 + years commercial Honeywell installation | 7000 |
| (DR/934) 3 + years IBM systems programming experience | 8000 |
| (DR/935) 3 + years at large mainframe backgrounds, car provided | 7800 |

NORTH WEST CONTACT

EDWARD BRUSH

| | |
|----------------------|--|
| NAME _____ | AGE _____ |
| ADDRESS _____ | |
| LANGUAGES USED _____ | |
| PHONE: HOME _____ | BUSINESS (will be used discreetly) _____ |
| YRS ANALYSIS _____ | YRS PROGRAMMING _____ |
| MACHINES USED _____ | |
| JOBSOUGHT _____ | REF NO. _____ |
| SALARY _____ | SALARY REQUIRED _____ |
| CW/27/3 | |

WEST MIDLANDS**ANALYSTS**

| | |
|--|--------|
| (DR/938) Senior analysts - manufacturing systems | £ 8000 |
| (DR/937) 3 + years commercial systems | 7500 |
| (DR/938) 18 + months commercial systems | 6250 |
| (DR/939) 2 + years commercial (COBOL background) | 7750 |
| (DR/940) 3 + years commercial (PL/I background) | 6500 |
| (DR/941) 3 + years commercial (PL/I background) | 7500 |
| (DR/942) 2 + years ICL preferred | 7250 |
| (DR/943) 2 + years analytical programming | 7000 |

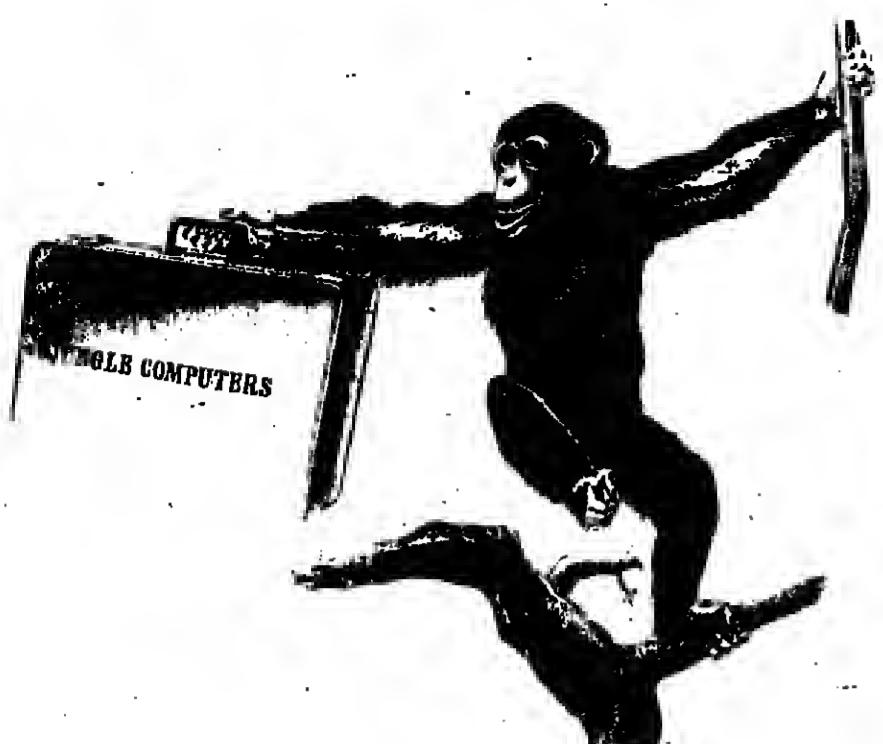
PROGRAMMERS

| | |
|--|--------|
| (DR/944) 2 + years Univac COBOL | £ 6000 |
| (DR/945) 2 + years COBOL any mainframe | 6250 |
| (DR/946) 3 + years Honeywell COBOL | 6500 |
| (DR/947) 18 + months CDBOL - new hardware | 5600 |
| (DR/948) 12 + months ICL COBOL | 5250 |
| (DR/949) 3 + years ICL COBOL | 7200 |
| (DR/950) 2 + years COBOL any machine | 6000 |
| (DR/951) 12 + months Honeywell COBOL | 4700 |
| (DR/952) Senior programmer COBOL any mainframe | 6750 |
| (DR/953) 18 + months Honeywell COBOL | 5700 |
| (DR/954) 2 + years IBM COBOL | 6000 |

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| | |
|--|--------|
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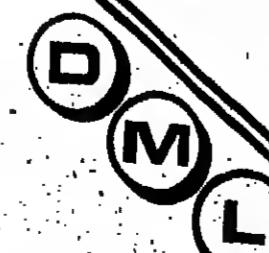
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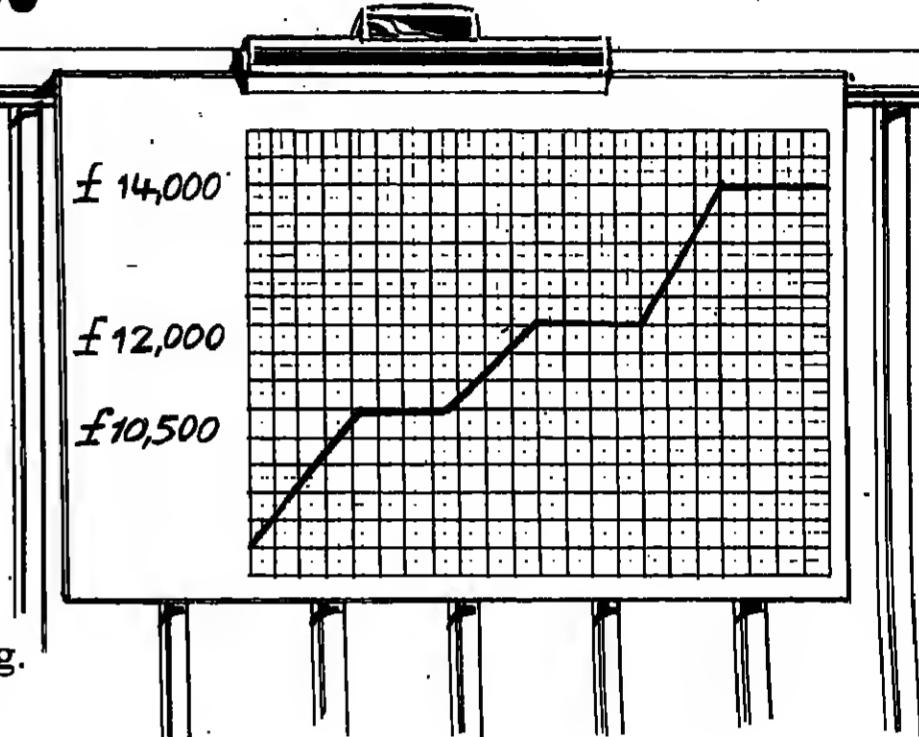
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CW 2713/3/80 Case

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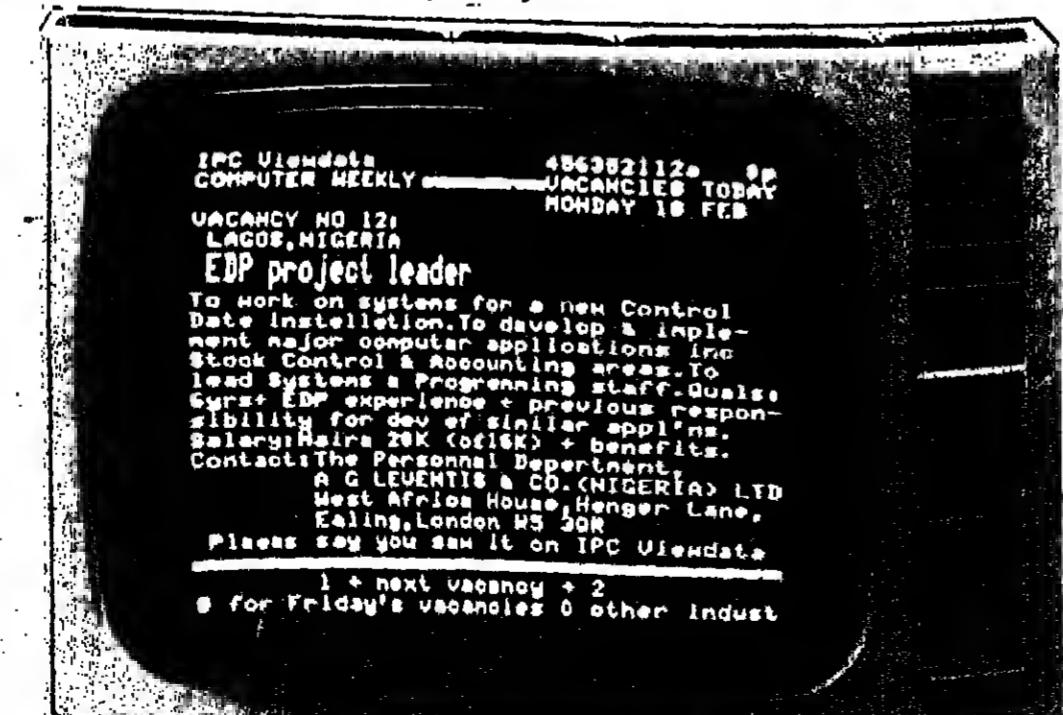
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Location: The Netherlands.

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Location: The Netherlands.

RPG II PROGRAMMER

To support general commercial systems running on IBM System 34 hardware. These include order processing and financial systems and, although not mandatory, some knowledge of COBOL could well be advantageous. Again, good previous experience will be looked for.

Location: The Netherlands.

UK CONTRACT OPPORTUNITIES

IBM ANALYSTS

To work on Insurance applications running on IBM 3031. Previous programming experience in COBOL under OS/VSI essential. Knowledge of insurance systems will be looked for.

Location: South Coast.

IBM ANALYSTS AND PROGRAMMERS

To work on IBM 370/168 using COBOL. Sound knowledge of IMS is essential. These opportunities are of a long term nature.

Location: Bedfordshire.

All the above opportunities carry really first-class remuneration — together with generous concessions already negotiated with the Dutch taxation authorities — plus four weeks paid holiday per annum, paid annual holidays and certified sick leave, as well as a holiday bonus and the full support of the administrative staffs based in our Dutch offices.

SO PLEASE WRITE OR TELEPHONE NOW:

Ann Arlidge, Marketing and Recruitment Director,
Industrial Artists (Hitchin) Limited,
21 Bancroft, Hitchin
Herts SG5 1JW
Tel: (0462) 52741/2/3 (Day) or (0462) 700701 (EvenWeekends)

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(324)

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SOFTWARE/HARDWARE SPECIALISTS



If you're a self-starter, here's a place in the sun that offers you the moon

Our Client is a UK based company currently selling a well-known range of computer hardware to European markets.

As part of an exciting programme of expanding interests, a new company will be launched to sell into Rhodesia a range of mini-computer systems already successfully marketed in the U.K.

We have been appointed, as specialists recruiters of computer personnel, to find a SOFTWARE SPECIALIST and a HARDWARE SPECIALIST to support this expansion into Rhodesia.

Are you a self-starter?

Successful candidates for both opportunities will be resilient, ambitious and able to work on their own initiative.

You'll be at least 26 years old, with good experience, and able to show us that you're something of an

entrepreneur. You'll welcome a pressure job that will stretch your abilities but at the same time give you immense career satisfaction.

The Software Specialist will have an in-depth knowledge of operating systems and an understanding of computer applications.

The Hardware Specialist must be able to fix anything from a printer to a complex C.P.U.

In both cases you will be responsible for training local staff for your eventual take-over.

What's it for you?

All the benefits you would normally associate with an overseas assignment including:

- 2 year contract on highly attractive terms
- Free travel to/from Rhodesia
- Free medical scheme, pension fund etc.



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Our clients offer experienced Assembler Programmers a creative career opening to work on advanced mini and micro software.

After an initial period in the support group to gain first-hand product understanding, creative programmers can transfer to the design and development team which builds new systems for the UK and European markets.

First-class job satisfaction will result from a deep involvement with new and existing products plus opportunities to travel to Europe.

The working environment is good and you will be in a small team of clever, business-like people.

To find out more about this unique London area opportunity, ring us quoting ref. 967/CW, or write briefly. Messages will be recorded after hours.

EDP SYSTEMS 01-637 5796
52-53 Margaret St. London W1N 7FF

Systems Analyst/ Programmer MUNICH

Motorola is growing more rapidly than any of its major competitors in the world of semiconductor technology. Since our data processing needs are growing at the same pace as our business, we have a requirement in our newly created Munich installation for a capable Analyst/Programmer with a solid computer orientated business background. This represents an unrivalled opportunity for a talented individual with technical ability and ambition to advance his/her career, whilst at the same time gaining extensive experience of business orientated computer systems. The ideal candidate, male or female, will be educated to degree level with substantial experience of IBM Large Scale Systems and ICL, Cobol and Mark IV Languages. A minimum of four years' relevant experience is essential and some understanding of German would be an advantage.

Munich itself is one of Europe's most beautiful cities where you will have the opportunity to sample a highly attractive Continental life-style and enjoy an exceptional standard of living.

Excellent career opportunities are available and a generous relocation expenses package will be paid.

This is a double opportunity you cannot afford to miss. To find out more, contact Brian Bedford, Personnel Director, Motorola Limited, Colvilles Road, East Kilbride, SCOTLAND. Telephone: East Kilbride 39101.

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Maybe you're unhappy in your job because you didn't know any better?

Sales and Marketing Services is unique in its ability to provide facilities for Sales Training, Market Research and Psychological Analysis as well as the Recruitment of sales and sales support personnel.

We have the skills to provide careers guidance for sales and marketing personnel as well as having access to all the major computer organisations. Thus we're ideally equipped to find the right jobs with the best companies.

Come and speak with us soon.

TRADE

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THE SALES BIT

Proper planning essential to selling success

I'm a sucker for sales anecdotes, truisms, catchphrases and alike. I recently picked up a phrase from a client within the computer industry (thank you, George!) which I believe is extremely pertinent.

Having presented you with the four Ps that define marketing ("the right product in the right place at the right price producing the right profit" — remember?) I am pleased to have the opportunity of presenting you with the five Ps of sales organisation "poor planning promotes pathetic performance."

That's absolutely true,

you know. You'll never succeed in selling it off the cuff. My constant observation is that really experienced senior salesmen, that should make them best qualified of all for handling their selling in an impromptu manner, are in fact the ones who are most heavily involved in planning every aspect of their selling activity. The fact is that their experience has shown them how much sales success is a direct function of personal organisation and planning.

The answer to the question, "What aspect of selling is most dependent on the five planning?" is — all of it! When you start to analyse the basic situation of having a sales territory and settling about achieving a quota for the year ahead the potential number of individual, albeit inter-related, planning situations is enormous.

Let's take the sales call, for example. Many salesmen, especially those who are working within a relatively static marketplace, calling on the same clients on a regular basis, supplying a virtually unchanging product, can convince themselves that selling to a predetermined pattern, or even selling at all (in the true sense of the word) a complete waste of time. They become "order takers."

Yet experience shows that no matter what the product or marketplace, from boiled sweets to battleships, any salesman wishing to raise himself above the level of mediocrity must totally understand and accept the need for working within a planned structure which is dictated by the needs of the individual buyer and the capability of his product.

I see the sales call as basically consisting of five stages: attention, interest, desire, credibility, close. Close: Having successfully negotiated the preceding stages, the sales close has to be applied. It could be a final close, an interim close or simply an agreement for further action to be taken. Whatever the circumstance the sales call should always end with a positive sales close of some kind.

The sales call should therefore take the form of a predetermined structure with a planned objective, within which both predictable and unforeseen factors can be controlled by a strategy based on an understanding of the individual buyer's business and its typical needs.

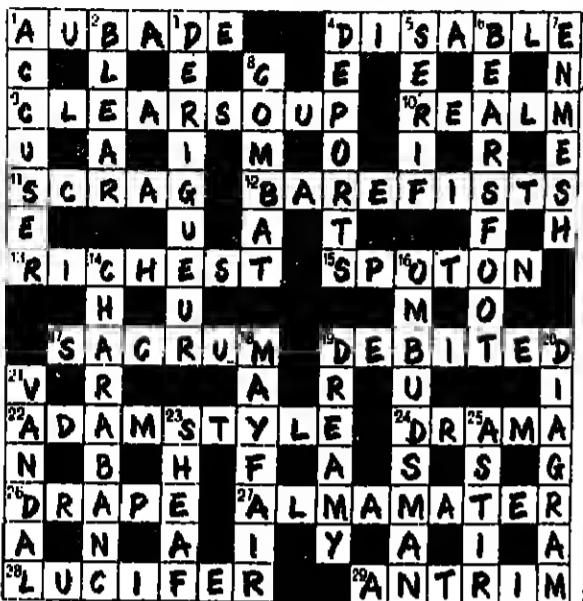
TRADE

Puzzle Answer
The third Perfect number is 496, which has the divisors 1, 2, 4, 8, 16, 31, 62, 124, and 248.

CW Prize Crossword No 3**SOLUTION**

Winner of Computer Weekly Prize Crossword No 3 is Chris Clark, a software engineer with IBM at Chelwood. He receives the first prize of £10. Second prizes of £5 each go to Janet Allum, a programmer at British Steel's Clydewedge Works at Cambuslang, Scotland, and David Wells of Hurst, near Swindon, a chief programmer with Vickers.

Prize Crossword No 4 will appear next week, April 3



European Support Organisation of a highly successful American Manufacturer of Small Business Systems seek its Monaco Base

SOFTWARE SUPPORT SPECIALIST

To assist an expanding network of European Distributors. Applicants should be fluent in English and preferably German and French and experience in two of the following:

1. BUSINESS APPLICATIONS SYSTEMS DESIGN AND BASIC LANGUAGE.
2. BASIC OPERATING SYSTEM AND FILE MANAGEMENT CONCEPTS FOR MULTI TESTING MICRO COMPUTER SYSTEMS WITH DISKETTE AND DISK MASS STORAGE.
3. PRACTICAL USE OF DATA COMMUNICATIONS IN DISTRIBUTED PROCESSING ENVIRONMENT.

Applicants must be willing to travel considerably throughout Eastern and Western Europe and occasionally further afield and be able to teach high-level programming methods and systems architecture in relation to the product range. Relocation assistance will be given to successful applicants.

Please apply in writing, giving outline of current situation, qualifications and relevant experience to Brook P. Taylor or Roy J. Goodo, L'Esporial Avenue Princess Grace, Monte Carlo, Principality of Monaco.

EASTER COPY DEADLINES

In view of the Easter holiday, the following deadlines for the receipt of classified advertisement copy will apply:

Issue dated April 3rd
Copy deadline Thursday, March 27th

Issue dated April 10th
Copy deadline Monday, March 31st

COMPUTER WEEKLY CLASSIFIED

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JBA

Project Leader - Engineering

North London Based c. £29,000

The engineering group of leading U.K. bureau, UCIL, is looking for a Project Leader to lead applications systems development and provide support to their engineering clients. Candidates, preferably scientific/technical graduates, should have a sound d.p. background in programming and systems analysis, and some supervisory experience at Project Leader level. The ability to communicate well with clients and colleagues is essential, as is the drive to succeed in this exciting and challenging environment. Training in the use of Databases and other software tools will be provided.

Contact: Margaret Stevens

German Speaking Programmers and Analysts

All locations in Germany Sal. Nat. rates

Our client, an established German Services organisation have been recently overwhelmed by requests for experienced d.p. professionals who have a command of the language - at least at conversational level. Of particular interest will be Programmers or Analysts with experience of any mainframe systems, either applications or software oriented. There are a variety of locations and types of organisations to consider and in some cases employment can be either permanent staff or long-term contractual.

Contact: Mike Creamer

Dutch Speakers

Central Holland from £16,500 p.a.

JBA has been asked to help recruit Dutch speaking d.p. professionals for multi-national development teams currently being set up in Holland. Naturally the main objective is to assure that good communication is maintained between the projects and their Dutch users, so the company is prepared to pay a premium to suitable candidates.

A range of experience is sought - e.g.: a Project Leader with good ICL 1900 and PLAN expertise through to Analyst/Programmers with IMS/DLI COBOL experience. Phone for more details of the employment packages available and a discussion of the types of project you are seeking.

Contact: Andy Wright

CODASYL Database Design

Amsterdam c. £18,000 + Car + benefits

A small, specialist Dutch company has several requirements for experienced database Designers and Analysts to work on new, advanced development projects. Duties will range from corporate systems strategy studies, through to technical design and project management so obviously candidates must have at least 7-10 years d.p. experience in all.

Foremost technical expertise must be a database design - e.g. DMS90/I100, IDMS, IDSII, DMIV etc. and should include sound T.P. and on-line systems design. Applicants without project or team management experience are acceptable but will be expected to possess extremely good technical knowledge.

Contact: Andy Wright

2960 - Senior Programmers

East Midlands up to £28,000

A division of an internationally famous organisation is seeking SENIOR PROGRAMMERS to assist in the development of commercial applications involving on-line, data base and data communications. Applicants should have a good education and at least 4 years COBOL programming experience.

Contact: Bev Stevens

INSURANCE COMPANY Systems Analysts

South of England Salaries up to £7,100 + mortgage subsidy + non-contributory pension + free permanent health scheme + low interest loans + subsidised canteen and sports/social club + all relocation expenses + other benefits.

A very attractive prospect for career-minded Analysts, keen to progress in a growth-oriented modern company putting in database and TP systems, promising exciting design and development work well into the 1980's. We are keen to hear from Analysts who have a sound business background, a good knowledge of COBOL and experience of system design over two to three years, ideally in an accounting, financial or banking environment.

Contact: Mike Creamer

COBOL Programmer (12 months)

Chingford, London £5,000

A manufacturing organisation involved in consumer and pharmaceutical products is seeking programmer potential. Membership of a project team is ensured and intensive audio/visual training offered from day one. The company are dedicated IBM users and the training will be tuned to CICS and DL/I techniques.

Applicants really must have at least one year (post training) COBOL programming experience on IBM equipment in a commercial/manufacturing environment. Drive and enthusiasm is sought together with an ambitious and career-minded approach to the d.p. industry.

Contact: Mike Creamer

Analyst/Programmer

London up to £28,000

Our client, a large international trading and banking organisation, has a vacancy for an analyst/Programmer to join a small team developing commercial systems on HP 3000.

Applicants should have at least three years experience of programming and design in numerical applications. Knowledge of real-time, communications and database would be an advantage. Excellent salary, opportunity and benefits.

Contact: Jim Baker

JAMES BAKER ASSOCIATES,

**International Personnel Consultants,
32 Savile Row, London W1.
Tel: 01-439 9311.**

10,000 PRIME GRADUATE RECRUITMENT PROSPECTS FOR 1980

COMPUTER WEEKLY

GRADUATE RECRUITMENT

April 30, 1980

A special publication for students
who are interested in a career in
computers

Computer Weekly - Britain's leading computer newspaper will be publishing a special Graduate Recruitment Supplement on April 30.

Although there continues to be a significantly high demand for professional data processing personnel, very little information is available to guide young people into a career in computers. This supplement will help to fill this information gap by reporting on the latest developments in the industry and give useful information and advice to students on training, career progression and salary expectations etc.

Circulation will be on a requested basis only free of charge to those students who will shortly be graduating and who have expressed an interest in a career in computers. All higher education establishments throughout the U.K.

have been informed about the supplement. Including those colleges who run the government-sponsored Threeheld and TOPS courses as well as the many commercial computer schools. Based on bulk orders already received, circulation will be a minimum of 10,000 copies.

If your organisation is interested in recruiting graduates to take up a career in computers, then this supplement provides an ideal opportunity for you to reach your prime recruitment prospects and outline the opportunities you are able to offer.

The supplement will be printed tabloid, the same size as Computer Weekly. Careers advertisements published will run through the supplement and a few special positions will be available on a page with editorial or facing, will be available.

COMPUTER WEEKLY
GRADUATE RECRUITMENT